

The following is claimed:

- Sub B.
- 00563003-094500
- 1     1. A speech encoding system comprising:  
2         a detector for detecting whether an input speech signal generally has a  
3         triggering characteristic during an interval;  
4         an encoder supporting at least one of a first encoding scheme and a first  
5         encoding scheme applicable to the speech signal for a frame associated with the  
6         interval, the first encoding scheme having a pre-processing procedure for processing the  
7         inputted speech signal to form a revised speech signal biased toward a generally ideal  
8         voiced and stationary characteristic; and  
9         a selector for selecting one of the first encoding scheme and the  
10        second encoding scheme based upon the detection or absence of the triggering  
11        characteristic in the interval of the input speech signal.
- 1     2. The speech encoding system according to claim 1 where the triggering  
2        characteristic comprises a generally voiced and generally stationary speech  
3        component of the speech signal.
- 1     3. The speech encoding system according to claim 1 where the selector  
2        selects the first encoding scheme if the detector determines that the speech signal is  
3        generally stationary and generally periodic during the frame.
- 1     4. The speech encoding system according to claim 1 where the selector  
2        selects the second encoding scheme if the detector determines that the speech signal  
3        is generally nonstationary during the frame.
- 1     5. The speech encoding system according to claim 1 further comprising:  
2        a perceptual weighting filter for filtering the input speech signal;  
3        a pitch-preprocessing module having an input coupled to an output of  
4        the perceptual weighting filter, the pitch pre-processing module determining a target  
5        signal for time warping the weighted speech signal.
- 1     6. The speech encoding system according to claim 1 further comprising a  
2        pitch pre-processing module for determining an input pitch track based on multiple

3 frames of the speech signal and altering variations in the pitch lag associated with  
4 samples to track the input pitch track.

1 7. The speech encoding system according to claim 1 where the first encoding  
2 scheme has a first allocation of storage units per frame between a fixed codebook  
3 index and an adaptive codebook index, the second scheme having a second  
4 allocation of storage units per the frame between the fixed codebook index and the  
5 adaptive codebook index, where the first allocation differs from the second  
6 allocation.

1 8. The speech encoding system according to claim 7 where the second  
2 allocation of storage units per frame allocates a greater number of storage units to  
3 the adaptive codebook index than the first allocation of storage units to facilitate  
4 long-term predictive coding on a subframe-by-subframe basis.

1 9. The speech encoding system according to claim 7 where the first  
2 allocation of storage units per frame allocates a greater number of storage units for  
3 the fixed codebook index than the second allocation does to reduce a quantization  
4 error associated with the fixed codebook index.

1 10. The speech encoding system according to claim 7 where the second  
2 encoding scheme has a higher allocation ratio than the first encoding scheme, the  
3 allocation ratio defined by a number of storage units allocated to the adaptive  
4 codebook index divided by the number of storage units allocated to the adaptive  
5 codebook index plus the fixed codebook index.

1 11. The speech encoding system according to claim 7 where, for full-rate  
2 coding, the first encoding scheme supports a first frame type and the second  
3 encoding scheme supports a second frame type different from the first frame type.

1 12. The speech encoding system according to claim 7 where, for higher-rate  
2 coding, the first encoding scheme supports a first frame type and the second  
3 encoding scheme supports a second frame type, and for lower-rate coding the  
4 encoder supports a third frame type and a fourth frame type.

1 13. A speech encoding system comprising:

2 a detector for detecting whether an input speech signal generally has a  
3 generally voiced and generally stationary characteristic during an interval;

4 an encoder supporting at least one of a first encoding scheme and a  
5 second encoding scheme applicable to the speech signal for a frame associated with  
6 the interval, the second encoding scheme having long-term prediction procedure for  
7 processing the inputted speech signal on a sub-frame-by-subframe basis;

8 a selector for selecting one of the first encoding scheme and the  
9 second encoding scheme based upon said detection or absence of the generally  
10 voiced and generally stationary characteristic in the interval of the input speech  
11 signal.

1 14. The speech encoding system according to claim 13 where the selector  
2 selects the second encoding scheme if the detector determines that the speech signal  
3 is not generally periodic during the frame.

1 15. The speech encoding system according to claim 13 where the selector  
2 selects the second encoding scheme if the detector determines that the speech signal  
3 is generally nonstationary during the frame.

1 16. The speech encoding system according to claim 13 where the second  
2 encoding scheme has a pitch track with a greater number of bits per frame than the  
3 first encoding scheme to represent the pitch track.

1 17. A speech encoding method comprising the steps of:

2 detecting whether an input speech signal has a triggering  
3 characteristic during an interval;

4 selecting one of a first encoding scheme and a second encoding  
5 scheme, for application to the input speech signal for a frame associated with the  
6 interval, based upon said detection of the triggering characteristic; and

7 processing the inputted speech signal in accordance with the first  
8 encoding scheme to form a revised speech signal biased toward a generally ideal  
9 voiced and stationary characteristic if the triggering characteristic is detected in the  
10 input speech signal.

B.  
1 18. The method according to claim 17 where the detecting step comprises  
2 detecting whether the input speech signal generally has a generally voiced and  
3 generally stationary component as the triggering characteristic during an interval.

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1 19. The method according to claim 17 further comprising the step of  
2 supporting the first encoding scheme having a first allocation of storage units per the  
3 frame between a fixed codebook index and an adaptive codebook index, the second  
4 encoding scheme having a second allocation of storage units per the frame between  
5 the fixed codebook index and the adaptive codebook index, where the second  
6 allocation differs from the first allocation

1 20. The method according to claim 17 further comprising the step of  
2 processing the inputted speech signal on a sub-frame-by-subframe basis in  
3 accordance with a long-term prediction procedure of the second encoding scheme if  
4 the triggering characteristic is not detected during the interval.

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